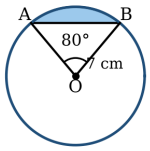
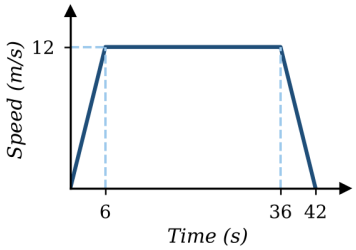
Day 152 **IGCSE 10-a-day**

1 $f(x) = x^3 - 5x^2 + 5$
(a) Find $f'(x)$.
(b) Work out the value of $f'(-3)$.

2 The circle has centre O and radius 7 cm. A and B are points on the circle and angle AOB = 80°.
(Calculator)
Work out the area of the shaded segment. Give your answer correct to 3 significant figures.
The diagram is not drawn accurately.



3 The graph shows the speed of a train between two stations.
(a) Work out the acceleration in the first 6 seconds.
(b) Work out the total distance.



4 A barrel is $\frac{3}{5}$ full.
62 more litres of oil are added and the barrel is then $\frac{4}{5}$ full.
Work out the capacity of the barrel.

5 A curve has equation $y = x^2 + 6x + k$, where k is a constant.
The tangent to the curve at the point where x = 1 passes through $(-1, -6)$.
Find the value of k.

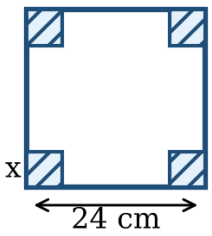
Day 152	IGCSE 10-a-day

6 $A = \begin{pmatrix} 1 & 6 \\ 1 & -1 \end{pmatrix}$ and $B = \begin{pmatrix} -19 \\ 9 \end{pmatrix}$.
AX = B, where X is a 2 × 1 matrix.
Find X.

7 Make x the subject of $y = \frac{-x + 6}{2x - 1}$

8 A house price increases by 25%.
What percentage decrease would take it back to its original value?

9 Squares of side x cm are cut from the corners of a 24 cm square cardboard sheet, which is folded into an open box of volume V cm^3.
(a) Show that $V = 4x^3 - 96x^2 + 576x$.
(b) Find x for the maximum volume, and this volume.



10 A rectangle has area 96 cm^2, correct to 2 significant figures.
Its length is 14 cm, correct to 2 significant figures.
Work out the upper bound of the width of the rectangle. Give your answer correct to 3 significant figures. (Calculator)